

**INDIANA DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS MANAGEMENT**

**PROCEDURE FOR BENCH TESTING, FIELD TESTING, AND APPROVAL LIST
REQUIREMENTS FOR EXTERNAL TIME CLOCK
ITM No. 935-15P**

1.0 SCOPE.

- 1.1** This test procedure covers the methods that an external time clock is bench tested, evaluated in the field, and is placed, maintained, or removed from an approval list.
- 1.2** This ITM may involve hazardous materials, operations, and equipment and may not address all of the safety problems associated with the use of the test method. The user of the ITM is responsible for establishing appropriate safety and health practices and determining the applicability of regulatory limitations prior to use.

2.0 TERMINOLOGY. Definitions for terms and abbreviations shall be in accordance with the Department's Standard Specifications, Section 101 and NEMA TS-2 Section 1.

3.0 SIGNIFICANCE AND USE. This ITM is used to evaluate, approve, maintain approval, and remove from the approval listing of external time clocks which are placed on the Department List of Approved Traffic Controller Equipment. Each model of external time clock will be bench tested and field tested separately.

4.0 APPARATUS.

- 4.1** Power source
- 4.2** Flasher assembly as load device

5.0 SAMPLING. The manufacturer shall furnish, at no cost to the Department, three randomly selected production-run external time clocks of each model for bench testing and field testing.

6.0 PROCEDURE.

- 6.1** The manufacturer of the material shall submit the Preliminary Product Material Evaluation Form (Appendix A) for each model and type of external time clock, which the manufacturer is requesting to be added to the listing.
- 6.2** The manufacturer of the material shall submit with the Evaluation Form the following:
 - 6.2.1** An invoice showing an initial zero dollar amount (\$0.00) for the use of the evaluation sample material during the evaluation. The invoice shall also list the deferred cost of the material the Department would pay if the material is purchased instead of returned upon the successful completion of the evaluation.
 - 6.2.2** Operation and maintenance manual(s) which includes theory of operation, schematics and component parts listing
 - 6.2.3** Three randomly selected production run time clocks for bench and field testing
 - 6.2.4** List of required software and any other additional items required to realize the full potential of the product

7.0 SUBMITTAL REVIEW. The documentation, including the environmental testing, will be reviewed for usability of the external time clock. The manufacturer's recommended schedule and extent of maintenance will be reviewed for acceptability.

8.0 BENCH TESTING. The external time clock will be bench tested for required functionality and full manufacturer's claimed optional functionality.

9.0 FIELD TESTING.

- 9.1** The field testing of the external time clock will consist of installing the external time clock in actual traffic for a period of up to 12 months to monitor the following:
 - 9.1.1** Any failures for the external time clock
 - 9.1.2** The relative ease of use for the field personnel
 - 9.1.3** Overall build quality and expected lifecycle of the external time clock. This requirement shall be comparable with existing approved external time clocks.

10.0 REPORT. A final report will include the notations and findings from the electronic bench test and field testing results and documentation.

11.0 APPROVAL LIST.

11.1 Approval of external time clock. The external time clock model may be placed on the approval list when the following conditions are met:

11.1.1 A potential net benefit to the Department is realized by inclusion of the item on the list.

11.1.2 The required documentation is submitted.

11.1.3 The bench and field testing are completed with satisfactory results.

11.1.4 No excessive amount of routine or periodic maintenance is required.

11.1.5 The external time clock shall include all manuals, documents, and software to realize the full potential of the external time clock.

11.1.6 Only minimal maintenance operations were necessary during the field testing.

11.2 Maintaining Approval.

11.2.1 The Highway Operations Division Evaluations Section shall be notified each time any update or revision of the firmware or software is made, and the changes and benefits of the change shall be submitted for approval. The Department will determine if and to what extent a revision is to be placed into field operation and may fully re-evaluate the time clock with the revision.

11.2.2 If the manufacturer makes any changes to an approved model to correct a safety issue, the Department shall be notified immediately. The manufacturer shall correct all existing equipment purchased by the Department either directly, by contract, or through agreement prior to the change being incorporated at the manufacturer's production level.

11.2.3 A design change to an approved model shall require a submittal of documented changes. At the discretion of the Department, resubmission of the model for testing and evaluation may be required. Permanent addition or removals of component parts or wires, printed circuit board modifications or revisions to memory or processor software, are examples of items that are considered to be design changes.

11.3 Removal from Approval List. The external time clock will be removed from an approval list for, but not limited to, the following reasons:

11.3.1 Changes in the external time clock components or production process that fail testing and/or evaluation

11.3.2 If three consecutive years elapse without furnishing the external time clock

11.3.3 Performance of the external time clock no longer meets the intended purpose

11.3.4 Recurring similar product failures indicative of a manufactures defect

**INDIANA DEPARTMENT OF TRANSPORTATION
OFFICE OF TRAFFIC ENGINEERING
PRELIMINARY INFORMATION FOR PRODUCT MATERIAL EVALUATION**

Trade Name _____ Date _____

Manufacturer _____ Patented? Yes _____ No _____ Applied for _____

Address _____
Street No (P. O. Box) City State Zip Code

Representative _____ Phone No () _____

Address _____
Street No (P. O. Box) City State Zip Code

Product Information _____

Materials Composition _____

** Is this product considered HAZARDOUS MATERIAL when disposing of non-used or surplus materials? Yes _____ No _____

** What is the shelf life of this material? Years _____ Months _____ N/A _____

Recommended Use-Primary _____

Recommended Use-Alternate _____

Advantages and/or Benefits _____

** Materials specifications by manufacturer, installation/operation manual, maintenance manual, literature, test results, guarantee, hazardous material data sheets, plan, picture or sketch must be submitted with this form. In the case of electronic devices the schematic diagram, parts list, and parts layout diagram must be submitted for each printed circuit board within the device.

Meets following specifications:

AASHTO _____

ASTM _____

OTHER _____

Use by highway authorities or similar agencies in other states.

Agency	Years Used	Remarks
_____	_____	_____
_____	_____	_____
_____	_____	_____

** Has product ever been evaluated by and rejected for use by a governmental agency?

Yes _____ No _____ If yes, by what agency and for what reason?

Will demonstration be provided? Yes _____ No _____

Availability: Seasonal _____ Nonseasonal _____ Delivery at site _____

After receipt of order, are quantities limited? Yes _____ No _____

** Will FREE SAMPLES be furnished? Yes _____ No _____
If yes, Quantity Furnished _____

** If the sample is salvageable, do you desire to have it returned Yes _____ No _____

(Desired return of salvageable samples will be at the supplier's expense.)
(The manufacturer agrees upon the return of salvageable samples, such samples may be damaged or non-operable. Normal care will be taken that the samples, when returned, are in operable condition; INDOT, however, does not guarantee that the returned samples are operable.)

Will laboratory analysis be furnished? Yes _____ No _____

** Approximate cost _____ Royalty Cost _____

When was the product introduced to the market? _____

This product is an alternate for what product? _____

Will warranty be provided? Yes _____ No _____ If yes, for how long? _____

Background of company, including principal products _____

What offices of the Indiana Department of Transportation have been contacted?

Additional Information _____

(Attach additional sheets as necessary)

Person furnishing information _____
Name Title

Address _____
Street No (P. O. Box) City State Zip Code

Items marked ** MUST BE RESPONDED TO or further consideration may not be given for this product.

Please mail this form to: Manager, Office of Traffic Engineering
100 N. Senate Ave., Room N925
Indianapolis, IN 46204-2249

If INDOT elects to evaluate your product/material - traffic signal equipment shall be shipped to:

Electronic Technician Supervisor
Indiana Department of Transportation
6400 E. 30th Street
Indianapolis, IN 46219-8222

While all other materials to be evaluated shall be shipped to:

Traffic Evaluations Engineer
Indiana Department of Transportation
6400 E. 30th Street
Indianapolis, IN 46219-8222